

In the claims:

1. (currently amended) A data encoding device having  
a serial data input;  
~~and~~ an encoded serial data output;  
a random number generator which generates a stream of random bits;  
a transformation unit comprising means for storing a predetermined number of values of the  
random bit to derive a multiple bit random word;  
a permutation unit which generates an initial plurality of encoding bits from the multiple bit  
random word; and  
~~wherein the serial input is supplied to~~ an encoding unit which combines each bit input on the  
serial data input input bit with a plurality of additional encoding bits forming an encryption  
key, to derive an encoded output bit and ~~a plurality of updated encoding bits, wherein each~~  
~~subsequent input bit is encrypted using an updated~~ encryption key comprising a plurality of  
updated encodes bits, wherein an initial bit input on the serial data input is encoded with an  
encryption key comprising the initial plurality of encoding bits output by the permutation unit  
and each subsequent input bits are encrypted using an updated key which is derived from  
previous values of the key and of the input bit, and wherein ~~the combination function~~  
~~performed by the encoding unit combines the input bit with a function of the key, such that~~  
over time the encoded output bit stream comprises substantially white noise.
- 2 - 4. (cancelled)
5. (currently amended) A data encoding device as claimed in claim [[4]] 5, wherein the  
serial input comprises a string of digital words each comprising a predetermined number of  
bits, and wherein the random number generator is clocked using a word clock, such that for  
each digital word of the input a new random bit is generated, and wherein the encoding unit is  
re-initialized by the output of the permutation unit once for each word.
6. (previously presented) A data encoding device as claimed in claim 1, wherein  
the combination performed by the encoding unit is carried out more rapidly than the time  
associated with the reception of each input bit from the serial data input, such that the  
encoded output bit represents the input bit with zero bit delay.

7. (previously presented) A data encoding device as claimed in claim 1, wherein the input comprises digital audio data.
8. (currently amended) An apparatus for generating digital audio data comprising a source of digital audio signals, and  
a data encoding device having: ~~a serial data input and an encoded serial data output, wherein the serial input is supplied to an encoding unit which combines each input bit with a plurality of additional encoding bits forming an encryption key, to derive an encoded output bit and a plurality of updated encoding bits, wherein each subsequent input bit is encrypted using an updated key which is derived from previous values of the key and of the input bit, and wherein the combination function performed by the encoding unit combines the input bit with a function of the key, such that over time the encoded output bit stream comprises substantially white noise; and a transmitter for supplying the encoded serial data output to an output port of the apparatus.~~  
a serial data input;  
an encoded serial data output;  
a random number generator which generates a stream of random bits;  
a transformation unit comprising means for storing a predetermined number of values of the random bit to derive a multiple bit random word;  
a permutation unit which generates an initial plurality of encoding bits from the multiple bit random word; and  
an encoding unit which combines each bit input on the serial data input with a plurality of additional encoding bits forming an encryption key, to derive an encoded output bit and an updated encryption key comprising a plurality of updated encodes bits, wherein an initial bit input on the serial data input is encoded with an encryption key comprising the initial plurality of encoding bits output by the permutation unit and each subsequent input bit is encrypted using an updated key which is derived from previous values of the key and of the input bit, and wherein over time the encoded output bit stream comprises substantially white noise.
9. (original) An apparatus as claimed in claim 8, wherein the output at the output port is in SPDIF or AES/EBU format.
10. (original) An apparatus as claimed in claim 8, comprising a compact disc player.

11 - 18. (cancelled)

19. (new) A data decoding device for decoding a serial data stream; comprising:  
a serial data input;  
a transformation unit comprising means for storing a predetermined number of values of random bits to derive a multiple bit random word;  
a permutation unit which generates an initial plurality of bits from the multiple bit random word; and  
an decoding unit which combines each bit input on the serial data input with a plurality of additional encoding bits forming a key, to derive an decoded output bit and an updated key comprising a plurality of updated bits, wherein an initial bit input on the serial data input is decoded with a key comprising the initial plurality of bits output by the permutation unit and each subsequent input bit is decrypted using an updated key which is derived from previous values of the key and of the input bit.

20. (new) A data decoding device as claimed in claim 19, wherein a random number extractor is provided for extracting a random number from the input to the decoding device and which provides a plurality of decoding bits for initialization of the decoding device.

21. (new) An apparatus for reconstructing digital audio signals comprising:  
an input for receiving encoded digital audio signals;  
a receiver for supplying the encoded digital audio signals to a decoding device;  
and an output for the reconstructed digital audio signal; and  
a decoding device comprising:  
a serial data input;  
a transformation unit comprising means for storing a predetermined number of values of random bits to derive a multiple bit random word;  
a permutation unit which generates an initial plurality of bits from the multiple bit random word; and  
an decoding unit which combines each bit input on the serial data input with a plurality of additional encoding bits forming a key, to derive an decoded output bit and an updated key comprising a plurality of updated bits, wherein an initial bit input on the serial data input is decoded with a key comprising the initial plurality of bits output by the permutation unit and

each subsequent input bit is decrypted using an updated key which is derived from previous values of the key and of the input bit.

22. (new) A data communications system comprising:  
a data encoding device comprising:  
a serial data input;  
an encoded serial data output;  
a random number generator which generates a stream of random bits;  
a transformation unit comprising means for storing a predetermined number of values of the random bit to derive a multiple bit random word;  
a permutation unit which generates an initial plurality of encoding bits from the multiple bit random word; and  
an encoding unit which combines each bit input on the serial data input with a plurality of additional encoding bits forming an encryption key, to derive an encoded output bit and an updated encryption key comprising a plurality of updated encodes bits, wherein an initial bit input on the serial data input is encoded with an encryption key comprising the initial plurality of encoding bits output by the permutation unit and each subsequent input bit is encrypted using an updated key which is derived from previous values of the key and of the input bit, and wherein over time the encoded output bit stream comprises substantially white noise; and  
a decoding device comprising:  
a serial data input;  
a transformation unit comprising means for storing a predetermined number of values of random bits to derive a multiple bit random word;  
a permutation unit which generates an initial plurality of bits from the multiple bit random word; and  
an decoding unit which combines each bit input on the serial data input with a plurality of additional encoding bits forming a key, to derive an decoded output bit and an updated key comprising a plurality of updated bits, wherein an initial bit input on the serial data input is decoded with a key comprising the initial plurality of bits output by the permutation unit and each subsequent input bit is decrypted using an updated key which is derived from previous values of the key and of the input bit.